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The Axe in its Relation to Ornamental Trees.

IT is a curious fact that Americans, who have destroyed more trees wastefully and foolishly than the people of any other country, and have stood and seen their forests, the envy of the rest of the world, swept away with hardly a voice raised in protest, are more unwilling than other people to use the axe in cases where the cutting of trees is really essential. A hundred square miles of forest may be swept by fire from some mountain range through the carelessness of an idle hunter, a mountain stream may be ruined, and the fertility of a smiling valley threatened. It is all taken as a matter of course, and is looked on as one of those unfortunate occurrences which the community is powerless to prevent. The forests of the national domain are robbed of their timber, and the public is satisfied with the simple acknowledgment of the general government that it has not the power or authority to protect its own property against the organized bands of plunderers who have been preying on it for a quarter of a century or longer. This indifference to trees when they are composing elements of the forest is a marked feature in American character, and is all the more marked from its contrast with our feelings about trees individually, especially trees which we have planted ourselves or have seen planted. When a tree is cut in one of the parks of this city there is a protest raised against the so-called barbarity of the act by a hundred voices which are silent about the destruction of the Adirondack forests. The protest in the one case is as much the result of ignorance and indifference as the silence in the other; and it is as necessary to use the axe, if the beauty and value of ornamental plantations are to be maintained, as it is to save the forests on the headwaters of important streams.

Most people hate to see a tree cut on the grounds which surround their homes, on the borders of the highway, in parks or squares or other public places. This is one of the principal reasons why, out of the millions of trees which are planted or spring up naturally every year in the eastern states, so few ever reach maturity or develop their true beauty.

It is a rare thing in all the more settled parts of the country to see a well grown tree. The soil and the climate are favorable, nevertheless, to the growth of trees; the variety which can be grown is very large, and trees have for many years been planted in great numbers in and near the towns of all the eastern states. The poverty of results obtained from the labor and money which have been expended in the embellishment of towns and of country estates by planting can, in most cases, be traced to the dread of using the axe. This is a fact which cannot be repeated too often or insisted on with too much emphasis. An Arbor Day is now devoted in nearly every state to planting trees. The custom is a good one in so much as it draws the attention of the young to trees and to their value; but the mere setting of trees in the ground is by no means all that is required in successful tree-culture, and some part of Arbor Day ceremonies might well be devoted to the care of trees already growing by supplying them with sufficient light and space for their requirements.

It is not very easy to lay down general rules for the proper thinning of trees in ornamental plantations, under which title we include all trees which do not grow in the forest. It is an operation dependent on judgment which can come only from experience; and it must depend on local conditions, such as the character of the soil occupied by the plantation, the nature of the trees which compose it, and the object which it is intended to serve. This much, however, can be said: no tree can grow into a thing of individual beauty unless it has from the beginning of its life sufficient room for growth in all directions. The branches of two trees not only should not be allowed to touch until they have reached their full size, but there should be sufficient space between them to enable the light to penetrate to the lower branches of both trees. When it is the object of the planter to produce eventually the effect of a grove or of a dense wood, it is necessary to keep the young plants sufficiently separated to permit the growth of lateral branches for many years. If this is not done, the individual trees lose vigor, become stunted and die early, and the object of the plantation is not accomplished.

It is a very common thing to find a plantation made to screen some unsightly object, like a building, a highway or the boundary of a park, fail to accomplish its object. The foliage is all at the top of the trees, the unsightly object it was intended to hide appearing between their trunks. This is the inevitable result of insufficient thinning when the plantation was young. The answer which people almost invariably make to a suggestion to thin one of these border plantations is, that if it is done the unsightly object will be brought into prominence. On the contrary, it is the neglect to thin that destroys the value of the trees for the purpose for which they were planted. It is difficult to make people comprehend that one healthy, well branched tree covered with leaves is more valuable than half a dozen small, stunted trees deprived of their lower branches and furnished with scanty foliage, or that crowding will produce this result. It is extremely difficult to make people look ahead in the matter of trees or to see in their mind's eye a tree twenty or thirty years after it is planted.

There are some varieties of trees which are more valuable than others on particular soils, and there are always in every plantation some individuals more promising than others. In thinning, those varieties and those individuals which promise the longest lives and the greatest beauty should be spared and the others destroyed. If a man is curious about trees, he will naturally preserve the specimen of a rare species and sacrifice common trees. One man may prefer to have his home surrounded by conifers, and another by trees with deciduous leaves. The successful thinning of a plantation depends on knowledge and taste. The more the man who is entrusted with planning work of this sort knows about trees, therefore, the more successfully the work will be done. Such knowledge is gained by experience, by being among trees, by thinking of them in their various aspects, by living with them and

loving them; and this is the best time of the year to consider trees with the view of improving their condition by the aid of the axe. The best time to examine them is just as the leaves have fallen and while the weather is still pleasant, and to mark for future cutting all that are doing more harm than good, and which are, therefore, better dead than alive.

But work of this sort must not be done hastily or carelessly. It is much easier to kill a tree than it is to rear one up; and the wise man does not cut a tree until he has considered the result of doing so from every point of view. It is best to hesitate in every doubtful case, and to think the matter over again before the axe is actually laid at the roots. There is, however, a great difference between the careful consideration of a matter of this sort and entire want of action; and as a general rule a man rarely makes a mistake in cutting too much or too often. If an error is made, it is in the other direction; and too little action rather than too much is the destroying element of our plantations.

A familiar phrase in the mouths of many people is, "I cannot bear to cut a tree, I love trees too well." The person who utters it does not love trees intelligently, and does not take the trouble to devote even a few minutes of serious thought to them and to their requirements. The man or woman who really loves trees soon learns enough about them to realize that there is not room enough for all that are planted or spring up, and that the kindest thing which can be done for a tree is to help it in its hard struggle for existence. The true lover of trees uses the axe freely, and the outcry against its use springs from sentimentality based on ignorance. There is no better week in the year than this to begin to learn about trees and their needs, or to determine if the axe cannot be used with advantage to the trees we encounter in our walks abroad.

A fortnight ago, among the numerous seedling Chrysanthemums raised by Mr. John Thorpe, Pearl River, New York, there was a long frame filled with plants which had been produced by crossing the varieties Roi des Précoces and Gloriosum. With half of these seedlings Gloriosum was used as the seed-parent while Roi des Précoces furnished the pollen. With the other half the process was reversed, Gloriosum in this case furnishing the pollen and the early variety being used as the seed-parent. The plants were not mixed indiscriminately, but the seedlings of each kind were massed together, and the striking fact which appeared was that the line between these two classes of seedlings was as distinctly marked as if they had been different species of plants. At one end of the frame the plants which had originated with Roi des Précoces as the mother plant had bold foliage and stiff stems with the flowers all standing face upward. In the other, the foliage was more delicate and the stems were weak and bent down under the weight of flower-buds. In both cases the influence of the male parent could be noted in the character of the flower, although the Gloriosum type of flower seemed to be the most prevalent.

The result exhibited here suggests the question which has been often asked whether there is any special class of qualities mainly transmitted by the male parent and another class of qualities mainly transmitted by the female parent—that is, if we desire, for example, to cross a specially hardy plant with one which is more delicate in constitution, although it possesses other qualities which we wish to transmit in the cross-bred plant, which variety shall we use for seed and which for pollen? If a hundred seedlings should be selected from a Tea Rose which had been fertilized with the pollen of a Hybrid Perpetual Rose and a hundred more with the same Hybrid Perpetual fertilized by a Tea Rose, which of the two lots would be likely to have more of the fragrance of the Tea or of its particular coloring? Which lot would be likely to excel in hardiness and possess the constitution of the Hybrid Perpetual and its habit of growth?

This is only one of the questions which are of interest to the hybridizer. The great majority of crosses are made haphazard, and perhaps the best of them have been the result of mere chance. There are a few experts who, by long trial, have discovered certain principles, which, perhaps, they can hardly formulate, but which must guide them in their selection. There is no doubt but that Dr. Walcott or Mr. Thorpe or Mr. Harris could produce a larger percentage of valuable seedlings in crossing the Chrysanthemum than could any one with less experience; but after all, there is so little absolute knowledge of the subject that it may be doubted whether anything more than a very few of the most general laws can now be formulated. Of course, if there are any special principles we can hope at last to know how to make our crosses if we wish to produce a certain effect in foliage, or if we wish to originate a fruit with a certain flavor or form or color, and the same is true, if we wish to improve plants, in regard to hardiness of constitution and adaptability to certain soils and certain regions. Perhaps, after all, there are secrets here and in the breeding of animals which Nature will never reveal. However that may be, here is one field in which careful experiment with recorded results seems to have been sadly neglected.

Evergreens in the New Jersey Pine Region.

THE evergreens of the Pines are so abundant in certain localities that the foliage of the deciduous trees is scarcely missed in winter. Extensive swamps of White Cedar (*Chamæcyparis thyoides*) form broad, irregular belts of unbroken green, bordered with many low-growing, broad-leaved evergreens. Here, protected by the Cedars, we find that all the younger trees of *Magnolia glauca* hold their leaves until spring. In the south it is entirely evergreen, while here it is only partly so.

The broad-leaved Laurel (*Kalmia latifolia*) is here quite tree-like, often from fifteen to twenty feet in height, with lower bushes growing among and all around them. These thrifty younger clumps are very beautiful. Some of these shrubs have much broader and more glossy leaves than others, and the color of the young branches is a marked feature. Some have twigs of a bright yellow, others take on various shades of red, which, contrasting with the dark, shining foliage, is very effective. The narrow-leaved Laurel (*K. angustifolia*) is also here in abundance.

The Hollies attain their greatest perfection in the moist soil near these great Cedar-belts, especially near the coast, where the trees are from six to seven feet in circumference, and fairly ablaze with their scarlet berries, while beneath them their relative, the Inkberry, with shining black fruit, grows in profusion.

The little shrub, *Cassandra calyculata*, is here, with its flower-buds strung all along the terminal branches in the axils of the small evergreen leaves, ready to open on the first warm days in winter.

One of the most charming of all these smaller shrubs is the Sand Myrtle (*Leiophyllum buxifolium*), which in these moist places attains the height of three feet, while in the more open dry barrens it scarcely reaches a foot in height. This pretty little evergreen has an abundance of small shining leaves, and in May its top is covered with flat clusters of small white flowers, with ten exserted stamens with purplish pink anthers.

The Bayberry retains its fragrant leaves here until late spring, the old leaves mingling with the new as if loath to give up their hold. And the evergreen Smilax is climbing over the deciduous shrubs, clothing them with its broad, thick leaves.

The Arbor Vitæ (*Thuja occidentalis*), the White Cedar of the north, is mingling with the trees and shrubs along this moist belt, but more as a shrub than a tree of any dimensions.

Turning our attention to the ground, we find charming evergreen herbaceous plants in these moist places. One of the most lovely is our Pine-barren Pyxie (*Pyxidanthera barbulata*), a little prostrate plant, growing in thick mats with small green and purplish leaves, and in early spring covered with a profusion of pink buds and white flowers.

The Xerophyllum attains its greatest perfection in these damp barrens, where it is a stately, fine plant. It consists of a thick mat of narrow, grass-like, reclining leaves, from a foot to eighteen inches in length. These clumps are quite ornamental in winter, and they are decidedly so in May, when they send up a flower-stem three or four feet in height, surmounted by a dense head of showy white flowers. Sometimes several stems arise from one clump. Its cultivation is considered difficult. Four years ago I had fifteen plants moved to my garden, where they are now all in a thriving condition. A shallow trench was made only a little lower than the surrounding ground in which they were planted. But they had been carefully removed with a large deep sod of earth surrounding each clump, and all the little shrubby plants that were growing around them were left in the sod. They are well worth all the trouble and cost of transplanting.

Farther back in the swamp, hid away among the Cedars, is the rare, local *Helonias bullata*, growing in clumps, with broad, thick evergreen leaves from six to ten inches in length. It grows almost wholly in water, and yet it is quite easy of cultivation in any common garden soil, where it will bloom in early April.

The Pitcher-plant is here in abundance, and is handsome all winter. The edge of the swamp is bordered with a thick carpet of aromatic Wintergreen in such profusion that the berries are collected for market, mostly by foreigners, who find a ready sale for the fruit in Philadelphia and New York.

I have tarried so long amongst the evergreens in the swamp that I have left no space to tell of the evergreens in the drier and more open woodlands.

Vineland, N. J. *Mary Treat.*

Enemies of the Grapevine.

AT the Conference on Grapes held by the Royal Horticultural Society in September in their gardens at Chiswick, one of the papers read by Mr. R. D. Blackmore treated on the above subject, and it may be of interest to reproduce a few of his remarks here.

The enemies of the Vine may be broadly divided into two groups—namely, those of the vegetable order, chiefly fungoid, and those of the animal, chiefly insects, while a third group that cannot be referred to either of the above may be called miscellaneous.

Fungoid diseases are numerous and difficult to define even by skilled mycologists. Gardeners, however, designate them, according to their choice of aggression, as mildew of the roots, mildew of the shoots and foliage, or of the bunch or berry. Mildew on the roots is not a very extensive malady, and appears to exist only in places where the roots have missed their proper share of moisture. Mildew on the foliage or berry, however, is always a nuisance, and unless dealt with immediately is likely to prove an extensive disorder. In the majority of cases the evil is caused by a want of genial warmth. Perhaps there has been a creeping draught or a sudden fall in the temperature, or something in the air that sends a shiver through the leaves, and then in the early morning the first symptoms of mildew are seen. It may be but a little gray breath on the under side of a young leaf, or a dull curl at the tip of the shoot, but to the eye of the experienced gardener it means the vanguard of an army of pestilence. The innumerable spores of the disease fasten onto a weak spot, and suck and grow and propagate with rapidity. These conditions must be met at once. Raise the temperature, stop every crevice of draught, and if there be no young grapes to forbid it, fill the air with a moist exhalation of sulphur and quicklime painted on the pipes. The leaves, also, when infested should be treated to a dose of sulphur, and the border where the Vine is growing syringed with a weak solution of soft soap and sulphur. But if the sensitive berries are set these strong measures must be modified and the treatment prolonged in a milder form. Mildew on the foliage is bad enough, but on the berries it is far worse, being so much less accessible. A course which has even lately been recommended, of sulphuring the bunch and then dipping it when ripe in a bucket of clean water, is a poor practice and spoils the appearance of the grapes. The proper course is to remove every diseased berry, or even the whole bunch if it can be spared, and burn it. Then soak the soil with water almost hot, close every ventilator, fill the house with warmth, and syringe the floor (if it is feared to paint the pipes) with soft soap and sulphur mixed.

Young gardeners do not seem to know or realize the danger of giving "bottom air" too soon. In the main these sudden attacks of mildew arise from chill caused by ungenial currents of air, which check rapid growth and prepare the surface for the reception of the hovering enemy. Every grape-grower has his particular crotchet, or, as he would rather have it called, his own enlightened theory, as to culture, for it is well known that grapes are well grown under different and sometimes diametrically opposite systems. Nevertheless, a time comes when principles reassert themselves. At the present day it is almost impossible to ripen a crop of grapes out-of-doors in England, yet it used to be done forty years ago. There has been no failing in the average temperature during these years, according to meteorological reports, but the failure is due almost entirely to the fact that open-air Vines are attacked by mildew, and this has discouraged growers.

Another violent and virulent disease of a fungoid nature is known as Anthracnose or Melanitis. Mr. Berkeley, the great mycologist, believed it to be identical with the "black spot" of Australia and the "black rot" or "grape rot" of America. The symptoms vary; in some cases no blackness is apparent until the last stage of the disease. The tip of the shoot is first attacked, and the unexpanded leaves assume a dirty wash-leather color. Lower down the shoot the expanded leaves become cupped and concave underneath. The entire shoot becomes dull and loses its crispness, and, if pinched, indents without breaking. The disease at last, after descending the stem, enters the older wood and quickly destroys the vine if not checked at the outset. Those kinds with thick, tomentose leaves, such as Gros Colman, Gros Maroc and Black Alicante, are the kinds chiefly attacked by this peculiar disease, while Black Hamburgh, Chasselas Musqué and others appear to be exempt from it.

The usual post-mortem remedy is to "search the roots"; but these, together with the side shoots and lower leaves, are always healthy until the disease reaches them. To thwart the disease Mr. Blackmore tried sulphur in every form, quassia, tobacco water, etc., but one day, seeing by chance a can of strong liquid manure, he plunged a shoot into it; this treatment caused a speedy arrest of the evil, and, after two or three more dippings, a renewal of sound growth.

Among the insect pests which attack the roots or stems of the Vine comes first and most fatal of all, the Phylloxera; happily, however (owing, perhaps, to climate), English gardeners do not make its acquaintance. Then the larvæ of the cockchafer, Cetonia and other beetles, weevils, wireworms, etc. The grub of the cockchafer, though destructive, does little harm now, because it is not in sufficient numbers. The Cetonia is rare and does little injury. But the weevil (*Curculio vitis*), both male and female, is a great pest. It tears the leaves, nips off the young shoots, and in the case of pot-vines, honeycombs the soil, filling the cells with fat, curled larvæ, which in a young state are bluish white, passing into yellow when fully grown, and assuming a dirty red color in the pupa state. The presence of this insect in a pot is revealed by the leaves turning yellow, the young bunches of grapes flag, and unless strong measures are soon applied the plant eventually dies. Prevention is the proper remedy. The soil should be searched for the weevils, but it is often difficult to find them, as they resemble it in color. A good method of catching them is by ordinary Maidenhair Ferns, which act as traps. The weevils like them and get into the crowns to rest, and if a plant is turned upside down and shaken over a piece of white paper every morning the weevils will drop out should any be present. Decayed potatoes, apples, carrots and the like may also be used as traps for these depredators with advantage.

The enemies which attack the shoots and foliage are red spider (*Tetranychus telarius*) and thrips (*Thrips minutissima*). The latter is rarer than the former, and its presence is often due to the introduction of such plants as Azaleas, Abutilons, etc., into the vinery. When once established it is difficult to get rid of, and its ravages must be combatted by much sponging with soft soap and tobacco. The mealy-bug (*Dactylopius adonidum*) if once established becomes a frightful pest. It is often imported in spring by ants, and unless seen to then the gardener will have to cope with a mass of woolly filth later on. The vine scale is another enemy, but a brush filled with strong insecticide will soon dispatch it.

Among miscellaneous enemies of the Vine are scorching, sunstroke, spot upon the berries, cracking, rust, and worst of all, "shanking." The latter, especially, which some consider to be due to a local disease of the foot-stalk and others to the lack of nourishment, seems at present to be a malady little understood.

It may be mentioned that Mr. Blackmore is the author of the popular novel, "Lorna Doone," and his lecture, of which the above is a mere outline, will appear in full in the Journal of the Royal Horticultural Society and will amply repay the reading.

London. *Phono.*

The Black Peach Aphis.

FOR many years Peach-trees in New Jersey, especially those in the sandy districts, have been in an unhealthy, thriftless condition. "They are badly dwarfed, and make only a feeble, sickly growth. The leaves are light green or yellowish, more or less rolled at the margins, and red or purple spotted from the attacks of Fungi." The trouble is not caused by the yellows, nor does it seem to be due to a particular fungoid disease. Fertilizers have been used to stimulate the trees, and kainit of potash has gradually come to be looked upon as a specific. This substance is undoubtedly a valuable stimulant and fertilizer, but it has another quality, to which, in the light of recent developments, most of its success is probably due. It is an insecticide of no mean value, and to this quality it owes the specific effect in a majority of cases. Dr. E. F. Smith, who has for many years studied the diseases of the Peach, has found that a plant-louse attacks the roots of the trees, and so devitalizes them as to check growth and give the well known yellow appearance.

This aphid (*Aphis Persicæ niger*, E. F. Smith) was very abundant in New Jersey during the season of 1890, not only on the roots, but on the leaves. During the month of May, at Vineland, the young shoots of several Peach-trees were attacked so that they were curled and dwarfed and all but destroyed. There was a similar experience in other

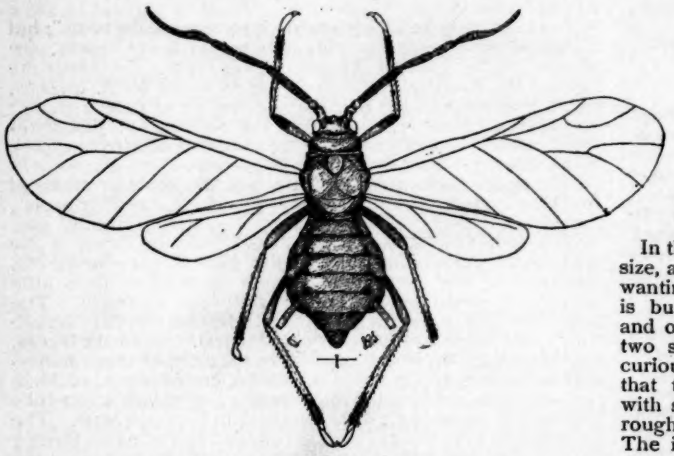

Fig. 70.—PEACH APHID (*Aphis Persicæ niger*); WINGED VIVIPAROUS FEMALE.

localities. The forms of this insect seen on the leaves and branches are principally wingless, viviparous females, deep black and shining, smooth, with a well marked margin or series of lateral depressions on the abdomen. The young are paler, more brown in color, and sometimes with a green shade in newly born individuals. Among these are found a few winged forms, of which the annexed figure gives a fair idea.

They are of the same shining black color as are the wingless forms, but the body is not so stout and the antennæ are longer. It is by these winged forms that the species is distributed. They fly to neighboring orchards, especially favoring young or nursery trees, and plant colonies which rapidly increase; and about midsummer make their way into the ground. At this time the leaves are comparatively deserted, but the roots are swarming with wingless forms. Nursery-trees now begin to sicken, and many die off. Dr. Smith mentions several cases of thousands of trees entirely killed, while one instance at least has come under my own notice in which the seedlings were rapidly succumbing to the attacks of this insect. Other failures reported to me are almost certainly referable to the same cause. On the root system the development continues, only wingless forms being produced, and this goes on until winter. In the mild winter of 1889–90 they continued nearly through the season. In the spring they come to the surface, and the life cycle begins afresh. There seems no place in this existence for the egg state, and true, sexed individuals are not known. There seems to be a continuous, agamic reproduction.

In general appearance this Peach-louse is very like the species infesting the Cherry (*Myzus cerasi*, Fabr.); but there are some curious differences. The antennæ in many of the plant-lice are furnished with sensory organs, the exact use of which is still unknown. In this species these sensory pits are most remarkably developed; not only are they very numerous, but they are on every joint, and are also very large. The figure brings out the structure fairly well.

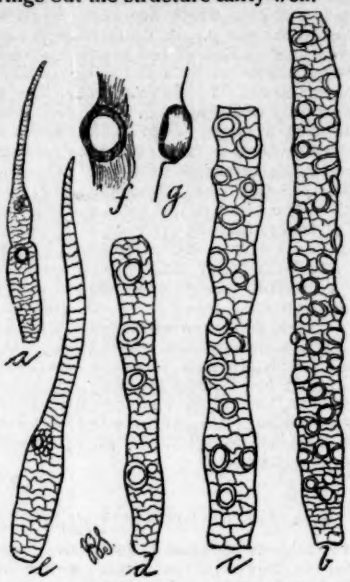

Fig. 71.—ANTENNAL JOINTS OF PEACH APHID.

a, antenna of young louse; *b*, first long joint of winged form; *c*, second long joint; *d*, third long joint; *e*, whip joint; *f*, sensory pit from top; *g*, same from side.

In the Cherry-louse these sensory pits, though still of good size, are very much reduced in number, and they are entirely wanting on the second long joint. On the third joint there is but a single pit near the tip, and only on the whip joint are the two species at all alike. Another curious fact in these antennæ is, that the joints are imbricated, or with scale-like markings, as rather roughly indicated in the figures. The injury is done by sucking the sap of the tree and thus diverting the nourishment.

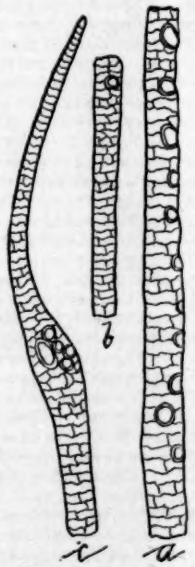

Fig. 72.—ANTENNAL JOINTS OF CHERRY APHID. (*Myzus cerasi*, Fabr.)

a, first long joint; *b*, third long joint; *c*, whip joint; all of the winged viviparous female.

While the insects are above ground they are quite readily dealt with. The ordinary whale-oil soap—Leggett's Anchor Brand—is as good a remedy as any; it should be used at the rate of one pound in six gallons of water; this will kill the lice without injury to the foliage.

This insect in its underground state is the most destructive and the most difficult to deal with, as it cannot be treated with insecticides. The kerosene oil emulsion might reach it, but it would have to be very thoroughly applied. We have a much better remedy in the potash salts, and of these the kainit is best, perhaps because it contains more salt than the muriate. This has the advantage of being stimulant as well as insecticide, and the entire cost of the application is retained in the vigor of the tree. The insecticide is therefore "thrown in," for only the fertilizer is paid for. The salts should be scattered broadcast, in good fertilizing quantity, and preferably before a rain, so that the salt water may reach the roots in the quickest possible time. Never hill up the trees with potash. The chances are that by doing so you will kill the trees as well as the insects.

Rutgers College. *John B. Smith.*

Plant Notes.

Some Recent Portraits.

HÆMANTHUS LINDENI, a beautiful new plant discovered by Mr. Auguste Linden somewhere in the Congo region, which has recently flowered for the first time in cultivation in the nurseries of L'Horticulture Internationale, Brussels, is figured in the issue of *The Gardeners' Chronicle* of October 18th. Mr. N. E. Brown, who describes it, finds that the plant remains a considerable time in flower, the head being very large, and producing a hundred or more large and brilliantly colored flowers, which open in succession. He kept the specimen which Mr. Linden sent him in water for nearly two weeks, during which time the flowers continued to expand. "This species does not form a true bulb, but has a thick, solid root-stock, from which arise six or eight leaves in two ranks that persist for a long time, the plant being practically evergreen." The scape arises from the side of the leaves, is moderately stout and about eighteen inches high. The umbel of flowers is six or eight inches in diameter, with a hundred or more flowers opening in succession. The individual flowers are two inches in diameter, with a tube nearly an inch long, and long, slender lobes, which are bright salmon-scarlet color, fading to pink. The long filaments are nearly of the same color as the perianth, although whitish at the base and furnished with purple anthers. Specifically, Mr. Brown points out, this species is most nearly allied to *H. Angolensis*, but the flowers are much larger and the leaves are dissimilar.

PÆONIA MOUTAN.—There is in *The Garden* of London, published on the 18th of October, a beautifully colored plate of a single white Tree Pæony, a seedling raised by Messrs. Kelway & Sons, of Langport, who have been experimenting during the last twenty years in raising seedlings of these plants. The seed ripens in September and is sown as soon as gathered in frames without artificial heat. Some of the seed vegetate the following year, and the seedlings are allowed to remain in the seed-bed for two years. The Langport system is to plant the seedlings in the month of October, in well enriched soil, in drills two feet apart and six inches between each plant in the drills. Here they remain for two years more, and are then finally planted three feet apart each way to bloom. The best seedlings are selected for stock and propagated after grafting in the following manner: "First procure a sufficient quantity of tubers of *P. Sinensis;* cut these into lengths of about six inches; then take grafts from the sorts you wish to increase and insert these into the upper end of the tuber in the ordinary way of cleft-grafting, tie securely and cover the junction with grafting wax so as to exclude the air. These should now be potted into five-inch pots, using a good rich compost; the pots should be plunged into frames unheated; give a good watering, and cover the frames with a thin mat to partially exclude light. In the winter they should have an extra mat to protect them from severe frost. The best time to perform this operation is in the months of August and September." To show the value of these plants as ornaments for the garden it is only necessary to refer to a specimen which a correspondent of *The Garden* describes as eight feet high and twelve yards in circumference. This wonderful plant had never failed during a quarter of a century to produce annually several hundred blooms. Tree Pæonies, which start to grow early in the spring, and are, therefore, liable to suffer wherever late spring frosts occur, really do much better in this country than they do in England, and it is surprising that their value is not more generally appreciated and that they are not more frequently planted. The single-flowered varieties especially are rarely seen, although they are more beautiful and desirable than those with double flowers. There are probably still many very fine varieties to be found in Japanese gardens which have not yet reached this country or Europe.

A FRUITING GINKGO.—The Japanese Ginkgo-tree has probably rarely fruited in this country. The tree is not fruitful until it attains a considerable age, and, as the sexes are separated on different individuals, it is essential that male and female trees should grow together in order to secure fertilization; and as it is impossible to distinguish the sexes until the trees flower, the securing of both in the same plantation is a matter of mere chance. A tree planted in the grounds of the Military Academy of Kentucky produced fruit several years ago, and one of the trees in Central Park in this city is now fruitful. Miss Graceanna Lewis, of Media, Pennsylvania, sends us an admirable drawing of the Ginkgo-fruit produced by a tree in the garden of Charles J. Wistar, Esq., at Germantown, Pennsylvania, now about forty years old. This tree bore a few fruits last year for the first time. The fruit of the Ginkgo, which few people who are not botanists realize is a conifer, is drupe-like, with a large, hard nut surrounded by thick oily flesh which soon becomes rancid and is very disagreeable. The kernel of the nut, however, has a delicate almond-like flavor much liked by the Japanese, who use great quantities of these seeds as dessert fruit.

Foreign Correspondence.

London Letter.

AUTUMN COLORS.—The weather here for the last six weeks has been remarkable for the absence of rain and an unusual amount of sunshine. The effect is seen in the bedding-plants and others placed out-of-doors for summer effect, which are now at least as good as they have been at any time during the year. Planting is delayed because of the dryness of the ground; indeed, the leaves of deciduous trees and shrubs are only now assuming their autumn colors. The conditions above named, coupled with a few slight frosts, have been favorable to the development of color in the leaves of most trees and shrubs. The Oaks, Beeches, Chestnuts, Maples, Liquidambars and Poplars among trees, and the Spiræas, Sumachs, Azaleas, Vines, etc., among shrubs, are especially rich in the glow of their golden, crimson, chocolate and scarlet hues. The Tupelos, *Nyssa multiflora* and *N. sylvatica*, are like flaming fires in color. Amongst the Sumachs the most noteworthy, on account of its beauty as much as its rarity, is *R. cotinoides*, for which Kew is indebted to Harvard. It forms a compact mass two yards through, and its leaves are now wholly rich orange in color. Apparently this species is quite at home in an ordinary border at Kew. We have not yet learned to make as much use in gardens of these autumn glowing leaves as we might. One frequently notices beautiful effects, which are the results of accident rather than design, in plantations and even in forests. These if reproduced in the garden would be delightful. We want some one to set down for us the names of the plants to use for autumn effects, such as those described, and the positions they thrive best in. Mr. Jack and other correspondents did something toward this last year in GARDEN AND FOREST. The brilliancy of color in many of these leaves in autumn is quite equal in effect to anything produced by flowers, and in a favorable season the leaves remain in beauty at least as long as flowers. And yet I think I am right in saying that in most gardens the usefulness of autumn-tinted trees and shrubs for producing a picturesque effect is either unknown or ignored. The Azalea-garden at Kew now is as charming in the varied hues of the leaves as it was when the flowers were the attraction. This is equally true of the shrubby Spiræas and of many other *Rosaceæ*. The Sumachs are almost singular in owing their favor in most gardens to the brilliant colors assumed by the leaves in autumn.

The Sea Buckthorn (*Hypophae rhamnoides*) by the side of the lake at Kew is as heavily laden with bright orange berries as the best fruited Pyracantha I ever saw. Is it known as a fine shrub in your gardens? Of course a male plant must be planted near the females to get fruits.

ORCHIDS.—*Cattleya Bowringiana* is a very useful plant, as it flowers late in the autumn when there are comparatively few Orchids in bloom. Its colors are warm and attractive, the flowers are elegant, and they last well. It may be called an autumn-flowering *C. Skinneri*. Another species of Cattleya which is flowering now is *C. maxima*. There are varieties of this so poor as to be scarcely worth growing; but in the variety named Peruviensis we have a first-rate plant, very free in the production of flowers, whilst the colors are brighter and the size almost twice as large as in the ordinary forms.

C. du Buyssoniana is a new species, of which plants in flower were recently exhibited in London by M. Linden's Company, of Brussels. It may be called a variety of *C. amethystoglossa*, with sepals and petals cream-yellow and a rich mauve labellum. The same company exhibited a plant in flower of a magnificent variety of *C. aurea* named Lindeni. The sepals and petals were of a clear lemon-yellow color, not buff, as is usual in this Cattleya, whilst the lip was enormous in size and heavily penciled with golden yellow. A series of varieties of this newly introduced Cattleya were exhibited under the name of *C. Warocqueana*, but which has been described by Mr. Rolfe as a variety of *C. labiata*. It appears to be about midway between the sub-species *C. Trianæ* and *C. gigas*, and is really distinct, large flowered, handsome and apparently easily cultivated. Some of the flowers exhibited measured seven inches across, the sepals and petals were of good substance and two and a half

inches across, whilst the lip was funnel-shaped, nearly four inches long, with a wide spreading undulated limb. The colors ranged in the different varieties from rich rosy mauve to pure white, the labellum being more or less deep maroon and yellow. Their varietal names were Regalis, Amethystina, Delicata and Flammea. There are many beautiful forms of *C. aurea*, but the rarest and most delightful of all is that named Imshottiana, of which Baron Schroeder exhibited a plant in flower last week. It has milk-white sepals and petals and a labellum colored as in the type. A specimen of *Cypripedium Fairreanum*, bearing seven elegant flowers, was shown from the Baron's collection, the richness of which is often

Fig. 73.—Celastrus articulata.—See page 551.

abundantly manifested at the meetings of the Royal Horticultural Society, in which the Baron takes such an active interest. Besides the above he also sent several plants in flower of his magnificent variety of *Dendrobium Phalænopsis*. Some of the flower-scapes were twenty-one inches long, and bore each six or seven flowers, which were three and a half inches across, and colored a rich rosy mauve, almost crimson, the color of the curiously formed labellum being a deep velvety maroon. Although introduced ten years ago from north Australia, yet this species is extremely rare in cultivation. I am informed, however, that the Linden Company, at Brussels, have lately imported about 2,000 strong plants of it. *Lælia grandis vera*, a fine form, with broad nankeen-colored sepals and petals and a rose-purple labellum blotched with maroon; *Aganisia cærulea*, a rare plant of some interest on account of its peculiarly formed and uncommon colored flowers, otherwise of little account as a garden Orchid; *Lælia Arnoldiana*, very similar to, if not the same as *L. Crawshayana*, and *Catasetum Bungerothii*, var. *Randii*, remarkable in having cream-yellow flowers instead of white, as in the type. These were the most striking of the Orchids exhibited at the last meeting of the Royal Horticultural Society.

Ærides Lawrenciæ is the largest flowered, and, at the same time, one of the most beautiful species known. It has lately become plentiful owing to a large importation of it by Mr. Sander, and its flowers are not now uncommon in collections. But in 1883, when first introduced, a single example was purchased by Sir Trevor Lawrence for 235 guineas. A plant of it now flowering at Kew was obtained several years ago for *A. Sanderianum*. It is related to *A. odoratum*, indeed probably only a variety of it, but the flowers are one and a half inches across and fully as long, and they are white, with magenta tips to the segments. *A. Sanderianum* is almost as large, but it differs in the form and color of the labellum. We are as yet ignorant of the habitat of these two noble Ærides, but it is probable that they occur together.

Pleiones are the gayest Orchids in flower now at Kew. Some of the pans in which they are grown are only ten inches across, yet I counted seventy-five flowers on one panful a few days ago. When understood, Pleiones are very easily cultivated. They require a rich soil, chiefly turfy loam and leaf-mould, no water after potting until they have pushed their new roots well into the soil, and then plenty until they lose their leaves again. A position near the glass in a sunny, airy greenhouse suits all

of them except *P. præcox*, which thrives best when grown in a warm house. When the flowers are opening the soil should be at once saturated and afterward kept just moist. Many people err with these plants by trying to grow them in a high temperature and by failing to give them a rest in a dry, sunny house from the time when the leaves fade until the flowers open.

Renanthera coccinea, the Chinese Air-plant, is one of the most gorgeous Orchids, but it requires a considerable amount of head room to persuade it to flower. In tropical countries it is a favorite plant for verandas or to grow in masses in sunny positions. The stems grow almost as long as the Vanilla, and the stronger and longer the stems the larger the inflorescence will be. About six years ago a few newly imported small pieces of this Renanthera were fastened to a dead Fern-trunk, which was placed in a sunny position in the Palm-house at Kew. One of these pieces is now nine feet long, and it bears a raceme of about sixty large, rich orange-crimson flowers. Compared with what is produced by well cared for plants in the tropics this is small, still the flowering of this plant in glass houses is of rare occurrence. By training the stems horizontally it is possible that they may be induced to flower even in small houses. The plant revels in sunshine and moisture.

Kew. *W. Watson.*

New or Little Known Plants.

Celastrus articulata.

ALTHOUGH discovered by Thunberg and first published more than a century ago, no figure, it seems, has appeared before of this handsome Asiatic species, which possesses very considerable value as a garden plant.

Celastrus articulata,* in cultivation, is a stout, rapid-growing and very vigorous, leafy plant, with twining stems, growing to a height of ten or fifteen feet. The bark is light brown or ashy gray, and is conspicuously marked with numerous small, pale, wart-like excrescences. The leaf is obovate, orbicular or oval, coarsely crenulate-serrate, contracted at the apex into a short, broad point, and at the base into a long, broad petiole. It is membranaceous, with a prominent midrib and primary veins and rather conspicuous reticulated veinlets, and is often, when fully grown, four or five inches long and two and a half to three inches broad. It is dark yellow-green on the upper, and paler on the lower surface. The small yellow-green flowers are produced in short axillary three-flowered clusters less than half the length of the petioles, and appear when the leaves are rather more than half grown. The fruit is globose or sometimes obovate, and pale green when it first ripens. Later and after opening, the pod turns bright, clear yellow, making a handsome contrast with the brilliant orange-colored aril of the seed. It is produced in great profusion often on short, spur-like, lateral branches, and does not disappear until late in the autumn or until long after the falling of the leaves, which, as long as they remain on the plants, nearly hide it from view.

Celastrus articulata is apparently widely distributed through northern and central China and through the northern parts of Japan. It shows, however, considerable variation in the form of the leaves, specimens collected by Dr. Henry (Nos. 5640 and 5986) in western China, and referred to this species by Professor Oliver, having ovate-acuminate leaves, slightly and remotely serrate only.

Celastrus articulata has been cultivated for several years in the Arnold Arboretum, where it was first sent by Mr. S. B. Parsons, of Flushing, New York, in 1879. It has also been raised here from seed collected by Dr. Bretschneider in the neighborhood of Pekin. It is perfectly hardy, and grows with the greatest rapidity and vigor, and has been found useful in covering rocks, walls and waste places; and late in the year, after the leaves have fallen, it is exceedingly ornamental.

Although much more vigorous, and a larger and more rapidly growing plant, it is less beautiful than the North American species, *Celastrus scandens*, the Climbing Bitter-Sweet or Roxbury Waxwork, in which the flowers are not axillary, but are produced in long, raceme-like clusters, terminating the branches, so that the fruit is raised above the leaves, and is a conspicuous and handsome object all through the early autumn, when that of the Asiatic species is hardly noticeable. The fruit of the American species is moreover rather larger and more brilliantly colored.

The figure on page 550 is from a drawing made by Mr. Faxon from one of the plants growing in the Arboretum.

C. S. S.

**Celastrus articulata*, Thunberg, "Fl. Jap.," 97.—Bunge, "Enum. Pl. Chin. Bor.," 97.—Maximowicz, "Mél. Biol.," xi., 200.—Franchet, "Pl. David.," 70.—Forbes & Hemsley, *Jour. Linn. Soc.*, xxiii., 122.

Articulata, the specific name in the "Flora," is, as Maximowicz has pointed out, a misprint for *orbiculata*, the name used by Thunberg in his preliminary catalogue of Japanese plants *l. c.* xlii.

Cultural Department.

Late Irish Potatoes in the South.

THE late fall crop of Irish potatoes in the south is annually becoming a more important matter as its proper treatment is better understood and the conditions for success are known.

Formerly, this late crop of Irish potatoes was the most uncertain of all, now it is as certain as any. Just at this date (October 25th), when northern Irish potatoes are retailing in Raleigh for sixty cents per peck, the outcome of the late planting is specially important. Experience has demonstrated that in this latitude the best time to plant this crop is about August 15th. In late autumns they may mature planted later, but this is about the most certain period. The practice of our best growers is to bed the small potatoes from the early crop as soon as dug in a single layer, so they do not just touch each other, cover with an inch or so of soil, and leave them until planting time. By mid-August all the immature tubers will either have rotted or dried up and the good ones will have begun to sprout. These are then planted in well prepared land, and only covered with about one inch of soil, which is rolled compactly. This shallow covering is one of the most important points, as it is found that if covered deeply they will not grow so rapidly. The crop planted August 15th will be matured by October 31st or a little later. Last fall (1889) was unusually late, and potatoes planted the second week in September made a good crop, the tops not being killed by frost until November 28th; but in an ordinary autumn it is desirable to be ready for killing frost early in November.

This late crop in this latitude can be left where they grow and covered with straw to prevent freezing. They can then be dug at any time in winter and will sell as new potatoes at a good round price. One grower in this state sold his entire crop last winter at the same price as new Bermudas, and made a very good thing of it. But the great advantage of this late-fall crop of potatoes is that they keep unsprouted all winter and late into spring, and will easily take the place of northern-grown old potatoes in spring when their quality is better known. The ease and certainty with which this crop is now grown will be a great inducement to southern farmers to extend the cultivation of late potatoes.

Raleigh, N. C. *W. F. Massey.*

The Rot Among Late Potatoes.

MANY specimens of rotting Irish potatoes have been received at the Agricultural Experiment Station within a week. A large number of the Potato-growers of Salem and Cumberland Counties, of this state, will lose their entire crop. In a recent visit to the regions most affected I have seen many fields that would have yielded 100 bushels per acre abandoned as not worth the cost of harvesting. The rot has been unusually serious in southern New Jersey. One cause, unmistakably, has been the protracted rains. The *Phytophthora infestans* thrives in moist weather; and while it appears more or less every season, it is only found in low places in dry seasons, although abundant enough to furnish a constant supply of spores for future outbreaks when weather favorable to it occurs. The Fungus first attacks the leaves and afterward works its way down the juicy stems into the tubers. Mildew may reach the potatoes by the spores on fallen leaves being washed into the soil by rains. This Fungus grows with surprising rapidity. A decayed potato, brought from near Bridgeton, was cut into halves this morning at eight o'clock, and each piece placed under a bell-jar standing upon a plate holding water to produce a moist chamber. At twelve o'clock spots of white mould were visible upon the cut surface, and, when subjected to microscopic

examination, were found to consist of numerous filaments of the Rot-fungus, many of which were bearing a half dozen spores, some apparently of full size. In four hours, therefore, the filaments within the potato had grown from the cut surface and "fruited," as the term is used by mycologists. This experiment indicates how rapidly the Rot-fungus may spread in a Potato-field.

It is a well known fact that the Potato-rot Fungus, as a rule, does not do its greatest damage until midsummer, and often not until late in September, as in the present instance. It is an advantage, therefore, all other things being considered, to plant early and to have the crops harvested before the decay becomes serious. Some of the people in southern New Jersey planted late to escape the Potato-beetles. There may be other advantages, in a good year, in having the crop late, as the labor is better distributed and the yield is larger; but in a wet season it is fatal. Aside from early planting, something can be done to check the Rot-fungus by spraying the vines. Experiments have proved that compounds of copper, as the Bordeaux mixture and others, are effective for Potato-rot. The fungicide may be mixed with water containing London-purple used for the beetles, and applied at the same time. A few sprayings in an ordinary year may save the foliage.

Rutgers College. *Byron D. Halsted.*

Late-Flowering Asters.

A. SHORTII.—This desirable plant is from four to five feet high, and it bears in great profusion flowers about an inch across, with pale lilac-blue ray-florets. The blooming season extends from the middle of October till the middle of November. It is found from Ohio to Georgia, westward to Illinois and Kentucky. Holding its flowers undamaged later than any other native Aster, the scarcity of other flowers and the forlorn nature of its surroundings render its aspect and utility more striking than would be the case earlier in the season. Rich garden soil, a position sheltered from strong winds and partially shaded from noonday sun are the conditions most favorable to the development of its best qualities. In an exposed sunny position or in light soil the growth of the plant is less vigorous, and, while it blooms earlier under such circumstances, the fewer flowers of indifferent quality pass away before those on plants in the right situation begin to unfold.

A. TARTARICUS.—This species comes from Tartary, having been introduced in 1818. In general appearance it differs widely from the ordinary species of this country. The thick, somewhat succulent stem is boldly erect, its surface prominently furrowed, and is generally more than six feet high. This plant has three distinct series of leaves. They are all oblanceolate and of a rather pale green color. Those of the radical series are fully two feet in length, crenate and converging at the base to a long petiole. The much smaller leaves of the stem are sessile and conspicuously serrate, and those of the branches still smaller, sessile and minutely serrate. The racemose-paniculate heads are few-flowered, the flowers, however, being an inch in diameter, with showy rays of deep reddish lilac. The plant is valuable chiefly on account of its late-flowering character, the flowers developing during the latter part of October and early in November. Half of the flowers still remain unopened. This plant is found useful here for cutting from, but in the warmer climate of states farther south it should prove still more valuable. A rather poor soil and a situation well exposed to sunshine are required to induce the plant to flower in this locality before severe frost renders it impossible.

A. TURBINELLUS.—This is without doubt the best of the late-flowering kinds. It is native in Illinois, Missouri and Louisiana. The stems attain a height of from three to four feet, and push branches from the axil of almost every leaf. The leaves are comparatively small, dark green, lanceolate and sessile. The flowers are about one and a half inches across, with ray florets of a showy blue tint, reflexed at the tip. The instances of more than one flower developing upon the same branchlet are exceptional, though one may occasionally find as many as three. The free-branching habit of the plant, however, ensures a bountiful supply of flowers. Strong clumps make an excellent display in the herbaceous border during the early part of October. The stems, of course, require staking, but if all the branches are left to assume their naturally pendulous habit the gracefulness of the mass will be materially enhanced. The time at which this Aster blooms renders it most useful for cutting, and space should be found for a few clumps of it for that reason. It is found at its best in a sheltered, sunny position in moderately rich soil. I am told that *A. lævis* is sometimes substituted for this species by dealers. *A. lævis* is a worthy enough subject in its place; but it is a less elegant plant with much coarser leaves, and its smaller blue flowers are past when those of *A. turbinellus* commence to expand. Purchasers, therefore, should be careful as to the reliability of the dealer with whom their orders are placed.

Cambridge Botanical Gardens. *M. Barker.*

Brunfelsias.

BRUNFELSIAS (*Francisceas*) are handsome Brazilian shrubs, several species of which have long been in cultivation, though comparatively rare in American collections. These plants need a warm-house, and do not thrive if given too much sun. Full exposure to the light and heat during the summer is not best for them, and though they enjoy liberal watering and syringing when in active growth, discretion should be used or the plants may become sodden and thus lose their roots. When this occurs it becomes rather a tedious operation to restore the plant to health. As to soil, Brunfelsias prefer a light peaty mixture, rather coarse and fibrous, and with good drainage; some lumps of charcoal are a useful addition. The propagation of the Brunfelsias is effected by means of cuttings made of the young growth; these root readily when kept rather close and subjected to a moderate bottom heat. The young plants grow quite rapidly in a temperature of sixty to sixty-five degrees, and the shoots should be pinched occasionally to encourage a bushy habit.

Old established plants will bear severe cutting back to keep them compact in form, as when they are allowed to take their own way they are apt to become rather straggling in appearance.

Regarding varieties it may be stated that *B. calycina* and *B. calycina major* are among the most showy. *B. calycina major* is a garden variety of *B. calycina*, and is quite similar in general appearance to the type, but rather stronger in growth. It bears larger flowers, which are often four inches in diameter, a deep purple color when first open, but fading several shades lighter as the flower ages. The leaves are lanceolate, from four to six inches long and bright shining green.

B. eximia is another fine species, and produces flowers about two inches in diameter and violet in color. The foliage of this species is not so large as that of the preceding, nor so bright, being dull dark green. *B. eximia* is not difficult to manage and continues in flower for a long time, and for this deserves special mention.

A much smaller variety than either of the preceding is *B. uniflora*, which is more useful when small than the stronger growers, from the fact that it makes a compact little plant and is almost continuously in bloom. The flowers are comparatively small, and about the color of a Neapolitan Violet at first, but gradually fade to white, the different colors of the flowers on the same plant having rather an odd effect. This plant is also of some repute in Brazil as a remedy for certain diseases, the roots, and in some instances the leaves also, being used as a medicine, and for this reason it is there known as "Vegetable Mercury."

B. Lindeniana is also worthy of cultivation, and has somewhat similar characteristics to *B. uniflora*, but is larger and stronger. Its flowers are bright purple, with a light centre, and very showy, and the leaves are of medium size, dark green and rather pubescent.

There are several other species which produce quite showy flowers, but those I have mentioned are most easily procured.

Holmesburg, Pa. *W. H. Taplin.*

Enemies of Chrysanthemums.

WHILE most of our Chrysanthemums are good, and a few exceptionally so, it is evident that they would have been much better, but for various diseases from which they have suffered. It cannot be true that failure, so frequently reported, is generally the result of carelessness. A good rich soil, when pot-grown, moderately rich when planted out; plenty of water; careful attention with regard to stopping growths, so as to obtain bushy plants; disbudding, to obtain good-sized flowers well distributed over the specimens. These seem to be necessities in cultivation.

The various insects which abstract the juices by means of a beak or proboscis, such as are commonly called chinch bugs, have been numerous as well as various. They appear to have been quite local in their ravages. As was stated by Mr. Jack in a recent number of GARDEN AND FOREST, no external application is of any use in overcoming them except temporarily.

Insects common here could hardly be found in a collection two miles away, where another prevailed which gave us no

trouble. Forty miles away an entirely different insect from either gave the most trouble.

Apart from diseased conditions, which are clearly caused by insects, there are some which are not so easily explained. A number of plants, some of which are now among the best, lost color, that is, went pale, the change being discernible in twenty-four hours. They regained color after two or three weeks without loss of foliage. I consulted several growers, and every one informed me that my plants were either too wet or too dry. I can only say the drainage was good in all cases. I read with interest Mr. Halsted's notes on the Nematodes in No. 138 of GARDEN AND FOREST, and according to his description I am inclined to think some of our plants have the disease caused by them, although I must say that most of the unhealthy plants are those which have been so for two or three seasons. Being good varieties, and some old ones, I have hesitated to throw them away, hoping to bring them into a healthy condition by careful treatment the whole year round. Good healthy-looking cuttings were put in with the others and flourished. All went well until the middle of June, when a few leaves began to wither on one side or at the tip of the leaf, while the base generally remained green and fresh. The affected portion would pass through all the stages of decay, and even after it had dried up the unaffected part would yet be green. A curious thing about this disease is that when once it appears it remains on that particular plant the whole season, and in every case they are old varieties which have exhibited the same disease before. Monsieur Raoux, Daimio, Roseum superbum, Alfred Salter and Talfourd Salter are the greatest sufferers, but neither Jardin des Plantes nor Mrs. George Rundle have done well.

Quite a number of plants have been attacked with a blue aphis on the roots, apparently the variety so destructive among China Asters near Boston last summer. The presence of ants always indicated affected plants. Soot, guano, lime-water (even to soaking the plants in it), sulphide of potassium and magnesium oxide were used against them. The latter compound usually drove the ants away for a day or two, but, likely, only to carry their stock of aphides to another plant, or, perhaps, return. I had an idea that if ants could be banished, successive waterings would fill up the air holes, which they constantly kept open, and so smother the aphides. There is also a roundish, white insect larger than the ordinary aphis, and not unlike what is known as "mealy bug." It is the ants' "cow." I notice now, October, they are busy carrying dead ones to the surface. I have used no insecticides, and do not know whether they have died a natural death or not.

I write of these troubles now in the hope that other growers will give an account of their experience, and perhaps suggest effective methods of treatment against the enemies which seem to attack the Chrysanthemum in increasing numbers every year.

Wellesley, Mass. *T. D. Hatfield.*

Ornamental Trees and Shrubs.

ROBINIA PSEUDACACIA, VAR. MIMOSÆFOLIA.—The foliage of this form of our native Locust is of an extremely light and graceful appearance, on account of the small size of the leaflets and their dark and rich shade of green. One would hardly imagine it to be a form of our Robinia at all at first sight. It is most striking in a certain airy character of its foliage, and must make an elegant specimen for a lawn.

ULMUS SINENSIS is a rare Elm, which makes a dense head composed of fine branches and twigs, with its deep green, glossy, acuminate leaves of only two inches in length by three-fifths of an inch in width, closely imbricated or overlapped, in one plane, on the new shoots. It is a tree of very remarkable beauty of foliage, and of as great beauty of outline of the head, when developed. There seem to be several varieties of this or closely related species lately introduced into cultivation, but the form here noted, with foliage lying in one plane on each new shoot, is very distinct and desirable.

A WEEPING PURPLE BEECH, lately introduced, is proving to be a really desirable tree. Its color is all that can be desired in a Purple Beech, and its pendulous habit is, apparently, an improvement upon that of the well known Weeping European Beech, on account of its regular, upright growth of stem. The irregular form of the old sort is, of course, one of its attractions, but the erect growth of the new variety is in its favor, at least in the practical business of propagating it in the nursery, where the old sort was very unsatisfactory. The side branches have a sweeping and regular "weeping" habit possessed by no other tree.

PTELIA TRIFOLIATA, VAR. AUREA, came out a few years ago, and we have been able to study it under all the conditions of propagation and growth for three years, and it is certainly one of the most richly colored of all the trees and shrubs, having yellow foliage, and keeps its foliage and its high color until into November. Its growth is that of a large shrub, and it can also be grown as a small tree. There is a gloss to the surface of the foliage of the Ptelia, and this serves to bring out the color of this new "golden" sort as varnish brings out the color of painted surfaces, thus greatly enhancing its effectiveness. The yellow or Golden Elder is, by many, considered the finest of that class of foliage plants; but a glance at both these kinds, growing side by side, shows this Ptelia to be very much the richer and more effective. I have never seen the latter burned by hot suns, while the former often gets scorched in midsummer. At this writing, October 9th, our Ptelias are splendid masses of color.

STYRAX OBASSIA has been perfectly hardy here at Cambridge for three years, and now appears to be perfectly contented. Its foliage is oval, or obovate, rugose, of very large size, fully seven inches long by five or six wide, of a light green color. Its blossoms have not appeared here yet, but are described by one who has seen them much in Japan as about one inch across, disposed in racemes eight inches long and very fragrant.

STYRAX JAPONICA, the other Japanese species, has, on the contrary, small and very distinct foliage, with blossoms borne singly and hanging down beneath the rather horizontal branches in the greatest profusion. Both seem to me among the best of the rarer shrubs.

Cambridge, Mass. *F. L. Temple.*

Vitis heterophylla, sometimes sold as *Ampelopsis tricolor* or the Turquoise Berry, is a hardy deciduous vine from Japan which deserves a place in every garden, although it is comparatively rare in cultivation. Its habit is similar to that of the Grape, and an established plant will cover a large space with its growth in a single season. The leaves are beautifully mottled with white, while their veins and petioles are a rosy red and the laterals are of the same color. The fruit is small, and it is also variously colored, ranging from a pale China blue to peacock blue, and it makes a beautiful contrast with the variegated foliage. The variegation is more striking on vines which grow in a partially shaded position. It should be planted in a rich loam made light and porous with old mortar or sand. Very little barn-yard manure should be used. Plants trained to pillars, railings or arbors should be cut back hard in winter and tied securely, and the new growth should be allowed to hang loosely where it is not necessary to extend the area it covers; but wherever it can ramble and grow at will it makes a charming picture. This plant is used as an undergrowth in beds of sub-tropical plants in the parks about London with a pleasing effect. It is readily propagated by cuttings from the ripened wood as Grape-vines are. It can be grown also from seed, but this is a much slower process.

Dongan Hills, Staten Island. *W. T.*

Correspondence.

The Hemlock in Eastern Minnesota.

To the Editor of GARDEN AND FOREST:

Sir.—In your issue for October 8th (p. 496) is a note regarding the discovery of the Hemlock in Carlton County, Minnesota, by Mr. H. B. Ayers, at a point farther west than any hitherto known. In Upham's "Catalogue of the Flora of Minnesota" the tree is doubtfully assigned to a few stations, one of which is not far from the place given by Mr. Ayers. The statement is made that they all need verification. Some of the localities are west of the one given by Mr. Ayers, but all of them are not beyond Carlton County. It may be of interest, therefore, to cite some passages from Schoolcraft's "Narrative Journal of Travels from Detroit North-west through the Great Chain of American Lakes to the Source of the Mississippi River in the year 1820" with reference to the presence of the Hemlock in this region. The expedition was under the direction of Governor Lewis Cass and passed through this part of Minnesota. In reading it, the impression is received that the Hemlock was then a common or even abundant forest-tree of the region. The narrative shows throughout that the author was a careful observer and would not easily mistake another tree for the Hemlock. These trees may have largely or wholly disappeared since that time; and if so, it would be interesting to know the causes, if discoverable, for they might have some bearing on forestry conditions and preservation.

It may be only the oft-told tale of destruction by fire and the axe, but if by the latter, the lumbermen ought to know something about it. But from the discovery of Mr. Ayers I suspect that more careful inquiry will lead to finding the tree in other localities, for I shall assume that Schoolcraft knew whereof he wrote.

The expedition went up the St. Louis River, which flows into Lake Superior at its western extremity, then called Fond du Lac Bay. From the St. Louis it crossed over to Sandy Lake, which is tributary to the Mississippi, and is situated in the county next west of Carlton. There it ascended the Mississippi as far as Cass Lake, which it took to be the source of the river. But I find no reference to the Hemlock which could be assigned to a range west of Carlton County, and have noticed none at all in Schoolcraft's account of his expedition in 1832 to Itasca Lake, which, however, is purposely abbreviated where the same ground was traversed. The first mention of the tree which can be assigned to Minnesota is during the passage of the Grand Portage of the St. Louis, the foot of which is placed in the itinerary twenty-three miles above its entrance into the bay. By a chain of rapids and falls the river makes a rapid descent of nine miles, around which boats and baggage had to be carried. Five "pauses" were made the first day of the ascent, a "pause," in the reckoning of the voyageur, averaging half a mile. The next day the party toiled on in a heavy rain, and the journal in part describes their experiences as follows: "We are advancing into a dreary region. Everything around us wears a wild and sterile aspect, and the extreme ruggedness of the country, the succession of swampy grounds and rocky precipices, the dark forest of Hemlock and Pines which overshadows the soil, and the distant roaring of the river, would render it a gloomy and dismal scene without the toil of transporting baggage and the saddening influence of one of the most dreary days" (p. 206). In the journal for the following day (July 8th), on which they halted, Schoolcraft gives a more extended account of the objects of interest observed, quite minutely noting the more prominent geological and vegetable features, as is seen in this extract: "The growth of trees is Pine, Hemlock, Spruce, Birch, Oak and Maple, the former predominating. In clambering among the rocks along the river I found the red Raspberry ripe. This appears to be the common *Rubus strigosus* with a thornless stem; berries scarlet-red, very sweet; akenes lightly adhering. Where depressions exist in the surface of the soil, so that it remains wet and marshy, the Tamarack is found, and the White Cedar is seen overhanging the cliffs on the banks of the river, and adds very much to the picturesque appearance of the St. Louis at this place" (p. 207). From the head of the Grand Portage they go on six miles to the Portage aux Couteaux, the "Portage of Knives," so named because the outcropping edges of vertically arranged layers of slate rock cut the moccasins and feet of the voyageurs making the passage. Its extent is a mile and a half. "The growth of trees here is almost exclusively Cedar, Pine and Spruce."

The difficulties attending the further ascent of the St. Louis being great, Governor Cass sent from this point a party of sixteen, including Schoolcraft and Indian guides, to see if a shorter and more expeditious road did not exist between it and Sandy Lake. The main expedition kept on by the usual route, the exploration by the detachment being for future guidance. But the obstacles encountered seem to have been of a more serious character than those of the ordinary route. It was represented as a two days' journey, but it took the party from the morning of July 10th till noon of the 13th to reach the lake, much of the way being in a very difficult forest. In the account of the first day this description occurs: "Our guides, taking their course by the sun, immediately struck into a close, matted forest of Pine and Hemlock, through which we urged our way with some difficulty. On traveling two miles we fell into an Indian path leading in the required direction, which we followed until it became lost in swamps. After pursuing it two miles, we passed through a succession of ponds and marshes, where the mud and the water were in some places half-leg deep. These marshes continued four miles, and were succeeded by a strip of three miles of open, dry, sandy barren, covered with shrubbery, and occasionally clumps of Pitch Pines. This terminated in a thick forest of Hemlock and Spruce, of a young growth, which continued two miles, and brought us to the banks of a small lake, with clear water and a pebbly shore" (page 210). Two more small lakes were passed soon after, and going on from the last of these for eight miles through a swamp of Tamarack, called by the author *Pinus pendula*, they came to another lake, by which they encamped, the whole distance made during the day being given as twenty miles. My copy of the book is unfortunately without the map published with it, but from a similar one given in the account of the expedition of 1832, and from the position of Knife Falls, from which they set out, this journey may reasonably be located in the northern tier of townships of Carlton County, or near by. In "Rand and McNally's Sectional Map of Minnesota" four small lakes are found not far apart in Township 49, Ranges 18 and 19, or, since the last stage of the day would indicate a lake somewhat farther off than any of these are from each other, they may have gone farther south into the next tier of townships to a lake near Kettle River.

The next day they went on for nine hours in the swamp, the distance made during the day being given as fourteen miles. It was a very fatiguing journey, under guides uncertain about the way. Schoolcraft gives the following account of some of the experiences of the day: "The dreadful storms which prevail here at certain seasons are indicated by the prostration of entire forests, and the uprooting of the firmest trees. These lie invariably pointing toward the south-east, indicating the strongest winds to prevail from the opposite point. It is one of the most fatiguing labors of the route to cross these immense windfalls. The trees are chiefly Tamarack, Spruce, Cedar, Ash, White Birch and Hemlock. In the course of the day we have crossed a turbid stream running toward the south, called Akeek Seebe (Kettle River), which is tributary to the Missisawgaiegon, which enters the Mississippi a short distance above the falls of St. Anthony, after having passed in the intermediate distance through the Great Spirit Lake" (page 214). This is in part a geographical error, as no rivers from this region go into the Mississippi except by Sandy Lake or the St. Croix. But Kettle River is tributary to the St. Croix, and it rises in the northern tier of townships of Carlton County not far west of the lakes mentioned above. This is the last mention of the Hemlock in the narrative as far as I have observed. On the 12th they went on for twelve hours in the swamp, emerging at nightfall, and encamping by a small stream called "Buffaloe Creek," tributary to Sandy Lake, which was reached the next day.

The body of the expedition continued their course up the St. Louis to the mouth of the East Savannah River, and by this and the West Savannah passed over to Sandy Lake. Schoolcraft requested Dr. Wolcott, physician of the expedition, to act as naturalist in his absence. It is not definitely stated in the short account he gave that the Hemlock continued to be found, though it may be included in the statement he makes that the banks of the river above the Portage aux Couteaux were "always covered with a thick growth of Birch, Elm, Sugar-tree (*Acer saccharinum*) and the whole tribe of Pines, with an almost impenetrable thicket of underbrush." Most of the botanical writers of the time included the Hemlock, Spruces and Firs under the genus *Pinus*.

From these extracts and statements it is safe to conclude that the Hemlock was a well known tree in this region in 1820, and that it extended, at least, well toward the western limits of the territory now included in Carlton County. And I may add that in going northward from Duluth to Two Harbors by the shore of Lake Superior, in the summer of 1889, I thought the Hemlock was one of the trees observed from the cars while passing. But in this I may have been mistaken, though I have reported the tree as present there. In a doubtful case thorough identification would demand closer inspection of a tree than can be had when the observer is in rapid motion. But as the Hemlock is reported by Agassiz among the plants of the northern shore of Lake Superior, it is not unreasonable to suppose it may be found at its western extremity. In his list of plants gathered, and given in connection with the topic headed "Observations on the Vegetation of the Northern Shores of Lake Superior" (page 165), he names no locality for the Hemlock, so that it is not easy to determine how far west it was found, the expedition having gone as far as the Victoria Islands, or nearly to the United States boundary, before turning homeward.

It might be deemed more satisfactory if Schoolcraft had somewhere given the botanical name of the Hemlock, as he does at times of other plants. But I do not find its scientific name in any of the three volumes of his explorations in this section or immediately south. But the *usus loquendi*, both in common and scientific language, at the time, is sufficient proof that the Hemlock-Spruce (*Tsuga Canadensis*, Carrière, *Pinus Canadensis*, Lin., and authors) was meant. As the equivalent of *P. Canadensis*, Hemlock, or more commonly Hemlock-Spruce, is given by the following authors about that time: Pursh (1814), Nuttall (1818), Barton (1818), Elliott (1824)—a list not intended to be exhaustive, but representative.

Englewood, Chicago. *E. J. Hill.*

Periodical Literature.

WE are pleased to find in the November number of the *Century Magazine* an editorial article entitled "Forestry in America." So clear and sensible a paper would have been pertinent and welcome at any time; but it is doubly valuable now, following as it does the articles by Major Powell in the same magazine, to which we have referred as likely to exert a pernicious influence on the public mind.

It is not needful that we should quote largely from the article. It simply rehearses facts and voices sentiments with which our readers are familiar. It speaks of the non-existence as yet of any real science or practice of forestry in this country, of the need for this science and practice, of such local efforts as have been made to preserve forests and beautiful tracts of landscape, and then, at some length, of the value of the forests on our public domain to the American people at large. The suggestion made in these columns, that until some more adequate means is provided the army should be used to preserve these forests, is endorsed, and an especially good point is made in the recommendation that, among spots which should in some way be forever preserved for public use, tracts of sea-shore ought to be included. This point has hitherto, we think, been overlooked in theoretical expositions of the importance of establishing parks and reservations of different kinds; but, as the writer says, "unless there is prompt action in this direction our children will probably live to see the shore-lands everywhere enclosed, and in many places a fee demanded for a good view of the ocean, as we had to pay to see Niagara until the state of New York made that scene of beauty and grandeur a public possession and forever free to all."

After describing the way in which forest-destruction influences a country, the editors say: "All this is known. It is not a matter of theory, probability or opinion. It has been incontrovertibly established by repeated observations in all the mountain countries of the Old World and in our own. The results are uniform. No exceptions have been observed, and there is no question or doubt regarding these destructive tendencies and effects among those who have observed the facts which are everywhere palpable in this department of nature and of human experience. Those who know anything of the subject are agreed that, in general, the forest-clothing of mountains cannot be permanently removed without far-reaching evil results." This is proof that, although they gave him the opportunity to explain a personal point of view, Major Powell's conclusions and desires are not endorsed by the editors of the *Century Magazine*.

Exhibitions.

Chrysanthemums at Short Hills, New Jersey.

THE blooming of the Chrysanthemums was the occasion of Messrs. Pitcher & Manda's autumnal flower show last week. The exhibitions at the United States Nursery have always been interesting, and with the continued growth of the establishment seem likely to become prominent attractions to local flower lovers. I found on a visit to Short Hills the main crop of Chrysanthemums in full bloom and the show-house arranged much more attractively than last year, when a large bed of the Mrs. Alpheus Hardy occupied the entire centre. This had given place to a fine arrangement of Palms, Tree-Ferns and other decorative plants, not only attractive of themselves, but presenting a foil to the great masses of flowers which were banked on all sides. A noteworthy (it might be said to be novel) feature was the arrangement of the flowers in harmonious color-masses, each color near its complementary one and the magentas at safe distances from the oranges. Messrs. Pitcher & Manda seem also to have arrived at the sensible conclusion that naturally grown plants, judiciously, but not severely, disbudded, and cultivated only enough to bring out the individual characters of the flowers, are such as are most appreciated by the public. While they showed many fine exhibition blooms to interest the fanciers of the flowers, the main display was made up of great masses of medium sized flowers, the effect of which was very pleasing, and, what was more to the point, as the exhibition was for prospective profit, those who intended to purchase could note the true characters of the different varieties under such cultivation as would not be beyond the skill of an ordinary grower. Exhibition blooms are superb, but misleading to the inexperienced.

One of the most striking features of the collection was the surprisingly large proportion of kinds which were either seedlings raised by Pitcher & Manda, or had been introduced by them, most of them of very high character. Good examples of their 1890 varieties were shown, including Shasta; Mrs. Hicks Arnold; Mrs. Grace Hill, creamy pink, fine incurved; Jean Humphrey, fawn; Rohallion, very distinct chrome-yellow; and Elliot F. Shepard, lemon-yellow.

A very large lot of seedlings were showing their first blooms, and there were many promising ones among them, mostly unnamed as yet. I noted Dr. H. A. Mandeville, a clear yellow Japanese reflexed, very deep and full; Number 65, a white, hairy kind, which seems to possess some points of superiority over Mrs. Hardy, and with the same habit; Number 30, a yellow Anemone, large, with very long guard florets, very distinct; Number 24, a large, pure white, reflexed kind; Number 165, a pink one of the same style; Mrs. E. D. Adams (white), George Savage, Hicks Arnold (old gold); but these are only a few of their coming novelties. Not to enlarge on the numerous distinct flowers, mention must be made of W. A. Manda, a seedling with extra long hairs and a dark color, but not yet perfected enough to describe.

Chrysanthemums occupy but a small portion of the nursery, for long ranges are full of Palms and decorative plants of choicest kinds in great variety, every important family having a specially arranged section. The Cypripedium-house, which contains probably the best collection in the country, was in fine bloom, and would well repay a journey. On the stages were many fine Cattleyas, Oncidiums and Vandas. Nepenthes occupied spare roof room, while Anthuriums brightened up odd corners. Messrs. Pitcher & Manda have engaged the large hall of the Madison Square Garden, and propose giving a grand show of Orchids, decorative plants and late Chrysanthemums on Thanksgiving week and the following Sunday and Monday. The transportation from such a distance, and at this inclement season, of enough plants to fill so large a space as the Madison Square Garden seems like a great undertaking; but if the charming display of last week can be successfully transferred to the city, we shall have one of the best floral shows yet given here.

Orange, N. J. *G.*

Chrysanthemums at Orange, New Jersey.

THE New Jersey Floricultural Society held its fifth annual Chrysanthemum Show in Orange last week. This is an exhibition which usually excites sharp competition on account of the liberal prizes offered, and brings together large displays from the numerous growers of the favorite autumn flower. The show this year was noticeable for some fine exhibits of new seedlings and cut blooms and the remarkable dearth of specimen plants. A Chrysanthemum show without great masses of plants and profusion of bloom is somewhat unusual. The indications are that this season will prove a great one for new seedlings of merit. Many were exhibited here for the first time. The Pitcher gold medal for best seedling plants was awarded to Mr. John Thorpe for his seedling, George W. Childs, a fine flower, full and deep, of a rich dark crimson, a color rare among Chrysanthemums. The habit is sturdy and the plant of medium height and very vigorous. Among a number of Mr. Thorpe's seedlings, Ernest Asmus, a fine bronzy chrome, was specially promising. The Pitcher silver cup for six best seedlings was taken by Mr. T. H. Spaulding with Ethiopian, Ethel Paul, John Firth, Lily Bates, Onward, Mrs. D. D. Farson. This was a grand lot of blooms, the latter especially having a flower of distinct form and good color, which may be called "La France pink." Messrs. Pitcher & Manda had a grand stand of flowers not in competition. Some of these were Mrs. Grace Hill, Dr. H. A. Mandeville (yellow), D. S. Brown (lemon-yellow), George Savage (white, seedling from Mrs. Hardy) and Hicks Arnold (old gold). They gained first premium for a seedling plant of Mrs. E. D. Adams, a very full white, somewhat in the way of Madame C. Audiguier in form.

William Tricker took first prize for fifty varieties of cut blooms, among which specially noticeable were Mrs. A. C. Burpee, Ada Spaulding, W. W. Coles, Eldorado, Excellent, Ivory, Mary Wheeler, Lilian B. Bird, Japonaise, Eynsford White, Sunflower, G. P. Rawson, Mrs. Irving Clarke, Mrs. Benjamin Harrison, Rohallion. The second prize in this class went to T. H. Spaulding. His best flowers were of Challenger, Cyclone, Mabel Ward and E. G. Hill.

The first prize for twelve blooms was taken by Ernest Asmus with Harry Weidener, J. C. Price, Sunnyside, La Fortune, etc., and William Tricker carried the second.

The first prize for six blooms went to William Tricker with Excellent, Grandiflorum, C. Orchard, Mrs. De Witt Smith, Ada Spaulding, Superbe Flore. The same grower also took first

prizes for the best twelve Chinese incurved and six Anemones, neither of which were up to first-rate standard.

A silver cup was awarded J. N. May for the best display arranged for effect—a good arrangement it was with autumn foliage.

In standard plants, John Farrell, gardener to Mr. Wm. Barr, took first prize for a lot of five-foot plants with flat trained heads—a very uniform lot, but not as useful or pleasing as the standards with untrained heads formerly exhibited by Mr. Farrell. A plant with a flat top, blooming at a height just above the vision of an ordinary observer, does not seem specially desirable, but will probably be grown as long as societies offer prizes, especially as with these the grower has no difficulty with the foliage so hard to retain on pot plants.

Low-grown plants and bushes were very few and ordinary. Mr. Farrell worthily gained the first prize for fifty plants in six-inch pots with single stems, with the best lot ever shown in this locality—grand blooms and perfect foliage. T. H. Spaulding was second in this class with a good lot.

Miscellaneous collections comprised groups of Palms and decorative plants, with a fine new Alocasia from Pitcher & Manda. A superb lot of Roses from Mr. J. N. May showed perfect blooms of Duchess of Albany, Mme. Capucine, La France, Catherine Mermet, Bride, F. Bennett, American Beauty and others. The new Rose, Waban—the "Red Mermet"—was on the same stand, and attracted much attention by its beauty and evident value.

Mr. H. A. Dreer exhibited a new Hybrid Perpetual Rose (unnamed) of great promise—a clear, bright rose in color. A horticultural exhibition would be incomplete without a few curiosities, and this contained the saddest examples of trained Chrysanthemums probably ever shown. An ingenious, not to say a misguided, grower, exhibited a series of plants the heads of which had been patiently trained to spell out his full name. Before casting too many stones at him would it not be well for growers to ask whether this is not the natural outcome and final result of the trained Chrysanthemum habit?

Newark, N. J. *J.*

Notes.

The American Florist will hereafter be published every week. Its editor announces that it will remain strictly a trade paper, but it always contains matter of interest to readers who are not commercial florists.

It is reported that in many parts of Nebraska, from which large exports of corn were made last year, the present crop will not suffice for home feeding. This loss was caused by the severe drought.

A sweet-scented Rose "of a steel-green color" has, according to accounts in foreign journals, been produced "after experiments lasting many years" by Dr. Bonelli, of Turin, and has been named by him the "Edison."

A recent writer in *Fire and Water* says that German chemists have discovered a means of preparing wood so that it becomes as indestructible as brick. A large hotel has just been built in Hamburg "entirely of blocks of compressed wood as hard as iron, and, by subjection to certain chemical processes, rendered proof against both fire and the attacks of insects."

It has long been the custom to give away to the public, in autumn, many of the plants which have been used in the "pattern-beds" of the Boston parks; and this autumn the same practice was commenced by the Commissioners of Fairmount Park in Philadelphia. This is certainly the best way to dispose of such superfluous stock, although it may tend to foster an undue desire on the part of the public for the perpetuation of the bedding-out system.

The beauty of a Chinese Oak (*Quercus Chinensis*) at this season of the year is worth noting. It is a tree from the northern parts of China, which was introduced several years ago by Dr. Bretschneider into the Arnold Arboretum, where it is perfectly hardy and is growing rapidly. The leaves at this season of the year turn bright canary yellow, like those of some Hickories and some individual Sugar Maples—an autumn color entirely unlike that assumed by any of our native Oaks.

In a conversation with a reporter of the New York *Tribune*, Mr. Charles A. Dana, who has just returned from a trip through south-eastern Europe, said that one of the things which had struck him most forcibly was the great extent of the cultivation of Indian Corn in Hungary, Roumania, Bulgaria—in short, with the exception of Greece, throughout south-eastern Europe; he had never seen in the western states of our country such immense fields of Corn as in these countries. "I should say, in fact, that in a continuous journey of 600 or 700 miles we saw nothing else except as a mere incident. The Corn makes the great mass of agricultural industry."

It would be difficult to name a shrub whose foliage turns to more brilliant colors in autumn than the Swamp Blueberry—*Vaccinium corymbosum*. It has the merit, too, of retaining its rich colors for a much longer period than most other trees and shrubs. It is still attractive, although it began to turn more than a month ago. *Rhus copallina* is another native shrub whose leaves remain a deep crimson for four or five weeks. This persistence of autumn color, as well as its brilliancy, should be taken into account when the comparative value of ornamental trees and shrubs is estimated.

Foreign journals are never tired of recounting the strange freaks of taste to which they suppose the American public gives way. The last report of this kind comes in a recent number of the *Illustrirte Gartenzeitung*, of Vienna, where we are told that "stewed Lilies" are now a recognized article of diet in this country, and that a favorite delicacy is "Rose cake," in which layers of cake alternate with layers of stewed fruit and of Rose-petals. It is furthermore said that American ladies are in the habit of administering to themselves hypodermic injections of perfume, and of varying the essence chosen so that their morning differs from their evening odor!

The paper contributed by Dr. M. T. Masters upon the comparative morphology, anatomy and life history of the *Coniferæ* to the *Journal of the Linnæan Society* has now been issued separately. This is a most important contribution to our knowledge of the cone-bearing trees, and is the result of personal observation and research carried on by the author during many years. The object of the investigation, he tells us, "has been to gain a general and comparative view of the external morphology of the whole order, to ascertain so far as possible the causes and conditions inducing the development of particular forms or modes of growth, and to inquire into the purposes of the numerous variations and presumed adaptations."

Mr. E. P. Powell writes from Clinton, New York, under date of November 1st: "I have to-day picked from a Mazzard Cherry-tree good, sound, delicious cherries, grown in my garden. The tree was covered, just after the cherries began to color, with mosquito netting to keep off the robins. Heretofore I have finished my cherries a good deal earlier; but having five trees covered, saved one to find out how long the fruit could be preserved. The cherry will hang in good condition all summer on the trees, and be fit for use till October, or, as I have now proven, till November. There will be some rotting after September. The fruit is to me so fine and wholesome I am willing to be at some cost to have it for five months."

Mr. James Mooney, who devoted much time to studying the Cherokee Indians, says that the aggregate botanical knowledge of their doctors embraces about 800 species of plants, although no one doctor knows the names of more than 300 species. As many as 2,000 species flourish in the regions of western North Carolina where the Cherokees have dwelt, but they have no names for even the most conspicuous flowers unless the plants are used as food or medicine; and Mr. Mooney concluded that they had no appreciation for beauty or fragrance as such. Nevertheless they must appreciate some of the qualities of plants in a semi-poetic, semi-superstitious way, for we are told that part of the ball-players' training is to assimilate the strength of Iron-wood, the toughness of the roots of *Tephrosia Virginiana* and the persistent erectness of a Rush by bathing themselves in decoctions made from these plants.

About thirty persons responded to the invitation extended by the State Forest-Commission to members of clubs and other associations owning land in the Adirondack region to meet them at an informal conference upon matters relating to the establishment of the proposed Adirondack forest-park. All who spoke considered the establishment of such a park desirable, and most of them agreed that the first object should be the protection of the sources of the Hudson River and other streams which rise in the mountain forests. The value of the wilderness as a sanitarium, as a place for summer rest and recreation, as a hunting ground and a preserve for fish and game, was also recognized. Another conference will be held at the office of Mr. Knevals, 32 Nassau Street, in this city, on November 19th at eleven o'clock in order to obtain further expression of opinion as to the best location of the park, its extent, the most feasible method of obtaining the land required, and what should be done in relation to the area owned by clubs and other large holders.